

WHAT IS CLAIMED IS:

1. A light-guide plate which is planar-shaped,
comprising:

5 an edge portion which is convexly shaped; and
 a corner portion is convexly shaped.

2. A area light source apparatus, comprising:

a light-guide plate which is planar-shaped, having an
10 edge portion and a corner portion that are convexly shaped;
 at least one light source which is arranged on a
peripheral side-surface of said light-guide plate;
 a case frame which is arranged on a rear surface side
and a side-surface side of said light-guide plate; and
15 a light scattering sheet which is arranged on an upper
surface of said light-guide plate.

3. A area light source apparatus according to Claim 2,
wherein a reflecting plate having a high reflectance is
20 arranged between said light-guide plate and said case frame.

4. A area light source apparatus, comprising:

a light-guide plate which is planar-shaped;
 at least one light source which is arranged on a
25 peripheral side-surface of said light-guide plate;
 a reflecting plate having a high reflectance, which is
arranged on a rear-surface side of said light-guide plate

and on a side-surface side other than a mounted surface of the light source;

a bottom plate which is arranged on a rear-surface side of said reflecting plate;

5 a case frame which is arranged on the side-surface side of said light-guide plate via said reflecting plate; and

a light scattering sheet which is arranged on an upper surface of said light-guide plate.

10 5. A area light source apparatus according to Claim 4, wherein said reflecting plate is arranged on said mounted surface of the light source, excluding a portion of the light source.

15 6. A area light source apparatus, comprising:
a light-guide plate which is planar-shaped;
at least one light source which is arranged on a peripheral side-surface of said light-guide plate;

20 a reflecting plate having a high reflectance, which is arranged on a rear-surface side of said light-guide plate;
a bottom plate which is arranged on a rear-surface side of said reflecting plate;

25 a case frame which is arranged on the side-surface side of said light-guide plate; and

a light scattering sheet which is arranged on an upper surface of said light-guide plate.

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7. A area light source according to any one of Claims 3 to 6, wherein said reflecting plate has a reflectance of 90% or more.

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8. A area light source apparatus according to any one of Claims 3 to 6, wherein said reflecting plate is made of a mirror, an aluminum thin film, or a high-reflectance film.

10 9. A area light source apparatus according to any of
Claims 1 to 6, wherein said rear surface of said light-
guide plate is formed to scatter light.

10. A area light source apparatus comprising: a
15 light-guide plate which is planar-shaped; at least one
light source which is arranged on a peripheral side-surface
of said light-guide plate; a case frame formed integrally
with a bottom cover, for accommodating said light-guide
plate and said light source; and a light scattering sheet
20 which is arranged on an upper surface of said light-guide
plate, wherein said light source is arranged on the
peripheral side-surface of said light-guide plate by
fitting at least one pin formed on the side surface of said
light-guide plate, into a hole formed on said light source
25 corresponding to said pin.

11. A area light source apparatus comprising: a

light-guide plate which is planar-shaped; at least one
light source which is arranged on a peripheral side-surface
of said light-guide plate; a case frame formed integrally
with a bottom cover, for accommodating said light-guide
5 plate and said light source; and a light scattering sheet
which is arranged on an upper surface of said light-guide
plate, wherein said light-guide plate is fitted into
said case frame and is fixed to said case frame by a hook,
as a projected latching portion, having an engaged surface
10 on a lower end, which is provided for said case frame or
said light-guide plate.

12. A area light source apparatus comprising: a
light-guide plate which is planar-shaped; at least one
15 light source which is arranged on a peripheral side-surface
of said light-guide plate; a case frame formed integrally
with a bottom cover, for accommodating said light-guide
plate and said light source; and a light scattering sheet
which is arranged on an upper surface of said light-guide
20 plate, wherein said light scattering sheet is adhered to
a lower surface of a reinforcing frame,

said case frame has a notch corresponding to a portion
for accommodating said reinforcing frame at a part of an
upper end surface, and

25 said reinforcing frame is accommodated in said case
frame by fitting a projected latching portion provided at
an end surface of said reinforcing frame, into a concave

portion provided on an inner surface of the notch of said case frame.

13. A area light source apparatus comprising: a

5 light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame formed integrally with a bottom cover, for accommodating said light-guide plate and said light source; and a light scattering sheet 10 which is arranged on an upper surface of said light-guide plate, wherein said case frame has a notch corresponding to a portion for accommodating said light scattering sheet at a part of an upper end surface, and said light scattering sheet is accommodated in said case frame by fitting a projected latching portion provided on an end 15 surface of said light scattering sheet, into a concave portion provided on an inner surface of the notch of said case frame.

20 14. A area light source apparatus comprising: a

light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame for accommodating said light-guide plate and said light source; a bottom cover; and a light scattering sheet arranged at an upper 25 surface of said light-guide plate,
wherein said bottom cover is fixed to said case frame

by fitting a projected latching portion provided on an end surface of said bottom cover, into a concave portion provided at a lower portion of an inner surface of said case frame.

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15. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame for accommodating said light-guide plate and said light source; a bottom cover; and a light scattering sheet arranged at an upper surface of said light-guide plate,

wherein said bottom cover is fixed to said case frame by fitting a projected latching portion provided on an end surface of said bottom cover, into a concave portion provided at a lower portion of an inner surface of said case frame, and

said light source is arranged on the peripheral side-surface of said light-guide plate by fitting at least one pin formed on a side surface of said light-guide plate, into a hole formed on said light source corresponding to said pin.

16. A area light source apparatus comprising: a

25 light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame for accommodating

said light-guide plate and said light source; a bottom cover; and a light scattering sheet arranged at an upper surface of said light-guide plate,

wherein said bottom cover is fixed to said case frame
5 by fitting a projected latching portion provided on an end surface of said bottom cover, into a concave portion provided at a lower portion of an inner surface of said case frame, and

10 said light-guide plate is fitted into said case frame and is fixed to said case frame by a hook, as a projected latching portion, having an engaged surface on a lower end, which is provided for said case frame or said light-guide plate.

15 17. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame for accommodating said light-guide plate and said light source; a bottom cover; and a light scattering sheet arranged at an upper surface of said light-guide plate,

20 wherein said bottom cover is fixed to said case frame by fitting a projected latching portion provided at an end surface of said bottom cover, into a concave portion provided at a lower portion of the inner surface of said case frame,

25 said light source is arranged on the peripheral side-

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surface of said light-guide plate by fitting at least one pin formed on a side surface of said light-guide plate, into a hole formed on said light source corresponding to said pin, and

5 said light-guide plate is fitted into said case frame and is fixed to said case frame by a hook, as a projected latching portion, having an engaged surface on a lower end, which is provided for said case frame or said light-guide plate.

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18. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame formed integrally with a bottom cover, for accommodating said light-guide plate and said light source; and a light scattering sheet which is arranged on an upper surface of said light-guide plate, wherein said light source is arranged on the peripheral side-surface of said light-guide plate by fitting at least one pin formed on a side surface of said light-guide plate, into a hole formed on said light source corresponding to said pin, and

20 said light-guide plate is fitted into said case frame and is fixed to said case frame by a hook, as a projected latching portion, having an engaged surface on a lower end, which is provided for said case frame or said light-guide plate.

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19. A area light source apparatus according to any
one of Claims 10 to 18, wherein a concave portion for
accommodating said light source is provided for said case
5 frame.

20. A area light source apparatus according to Claim
19, wherein said concave portion provided for said case
frame comprises a spring for pressing said light source to
10 said light-guide plate.

21. A area light source apparatus comprising: a
light-guide plate which is planar-shaped; at least one
light source which is arranged on a peripheral side-surface
15 of said light-guide plate; a case frame for accommodating
said light-guide plate and said light source; a bottom
cover; and a light scattering sheet arranged at an upper
surface of said light-guide plate,

wherein said bottom cover is fixed to said case frame
20 by fitting a projected latching portion provided on an end
surface of said bottom cover, into a concave portion
provided at a lower portion of an inner surface of said
case frame,

25 said light source is accommodated in a concave portion
provided for said light-guide plate, and

said light-guide plate is fitted into said case frame
and is fixed to said case frame by a hook, as a projected

latching portion, having an engaged surface on a lower end, which is provided for said case frame or said light-guide plate while a spring provided for said case frame enables said light source to press said light-guide plate.

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22. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame formed integrally with a bottom cover, for accommodating said light-guide plate and said light source; and a light scattering sheet which is arranged on an upper surface of said light-guide plate,

wherein said light source is accommodated in a concave portion provided for said light-guide plate, and

said light-guide plate is fitted into said case frame and is fixed to said case frame by a hook, as a projected latching portion, having an engaged surface on a lower end, which is provided for said case frame or said light-guide plate while a spring provided for said case frame enables said light source to press said light-guide plate.

23. A area light source apparatus according to Claim 21 or 22, wherein the inner surface of said case frame comprises the spring for pressing said light source to said light-guide plate.

24. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame formed integrally with a bottom cover, for accommodating said light-guide plate and said light source; and a light scattering sheet which is arranged on an upper surface of said light-guide plate,

wherein said light source is mounted on said case frame by fitting at least one pin formed on said case frame, into a hole formed on said light source corresponding to said pin, and

said light-guide plate is fitted into said case frame so that said light source is arranged on the peripheral side-surface of said light-guide plate.

25. A area light source apparatus according to Claim 24, wherein said light-guide plate is fixed to said case frame by a hook, as a projected latching portion, which has an engaged surface at a lower end and is provided for said case frame or said light-guide plate.

26. A area light source apparatus comprising: a light-guide plate which is planar-shaped; at least one light source which is arranged on a peripheral side-surface of said light-guide plate; a case frame for accommodating said light-guide plate and said light source; a bottom

cover; and a light scattering sheet arranged at an upper surface of said light-guide plate,

wherein said bottom cover is fixed to said case frame by fitting a projected latching portion provided on an end 5 surface of said bottom cover, into a concave portion provided at a lower portion of an inner surface of said case frame,

said light source is mounted on said case frame by fitting at least one pin formed on said case frame, into a 10 hole formed on said light source corresponding to said pin, and

said light-guide plate is fitted into said case frame so that said light source is arranged on the peripheral side-surface of said light-guide plate.

15 27. A area light source apparatus according to Claim 26, wherein said light-guide plate is fixed to said case frame by a hook, as a projected latching portion, which has an engaged surface at a lower end and is provided for said 20 case frame or said light-guide plate.

28. A area light source apparatus according to Claim 24 or 26, wherein said pin is formed at a concave portion formed to said case frame, and said light source is mounted 25 on the concave portion of said case frame by fitting said pin into the hole formed on said light source corresponding to said pin.

29. A area light source apparatus according to Claim
24 or 26, wherein said case frame comprises a spring for
pressing said light-guide plate to said light source.

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30. A area light source apparatus according to any
one of Claims 10, 11, 14 to 18, 21, 22, 24, and 26, wherein
said light scattering sheet is adhered to a lower surface
of a reinforcing frame, said case frame has a notch
corresponding to a portion for accommodating said
reinforcing frame of said light scattering sheet at a part
of an upper end surface, and said reinforcing frame is
accommodated in said case frame by fitting a projected
latching portion provided at an end surface of said
reinforcing frame, into a concave portion provided on an
inner surface of the notch in said case frame.

31. A area light source apparatus according to any
one of Claims 10, 11, 14 to 18, 21, 22, 24, and 26, wherein
said case frame has a notch corresponding to a portion for
accommodating said light scattering sheet at a part of an
upper end surface, and said light scattering sheet is
accommodated in said case frame by fitting a projected
latching portion provided on an end surface of said light
scattering sheet, into a concave portion provided on an
inner surface of the notch in said case frame.

32. A area light source apparatus according to any one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein said hooks are formed on inner surfaces opposed to each other, on one side of said case frame, while mutually being separated, and are formed on both sides of a mounted position of said light source.

33. A area light source apparatus according to any one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein 10 said hooks are formed on opposed inner surfaces on one side of said case frame, point-symmetrically to the center of said case frame, and further are formed in the center in a width direction, of opposed inner surface on the other side of said case frame.

34. A area light source apparatus according to any one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein 15 said hooks are formed on opposed inner surfaces, on one side of said case frame, while mutually being separated.

35. A area light source apparatus according to any one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein 20 said hooks are formed at an uppermost portion of the inner surfaces of said case frame and a height of said light- 25 guide plate is up to the engaged surface of said hook.

36. A area light source apparatus according to any

one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein
said hooks are formed at an uppermost portion of the inner
surface of said case frame, said light-guide plate is
formed with a stepped surface for being engaged to the
5 engaged surfaces of said hook in an ascending direction and,
thus, the upper surface of said light-guide plate and an
outer end surface of said case frame exist on the same
plane.

10 37. A area light source apparatus according to any
one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein
said hooks are formed at an intermediate portion in a
height direction of the inner surface of said case frame,
said light-guide plate is formed with a stepped surface for
15 being engaged to the engaged surface of said hook in an
ascending direction and, thus, the upper surface of said
light-guide plate and an outer end surface of said case
frame exist on the same plane.

20 38. A area light source apparatus according to any
one of Claims 11, 16 to 18, 21, 22, 25, and 27, wherein
said hooks are formed at an intermediate portion in a
height direction of said light-guide plate and a concave
portion, into which said hook is fitted, is provided at an
25 intermediate portion in a height direction of the inner
surface of said case frame.

39. An image reading apparatus using a area light source apparatus according to any one of Claims 2, 4, 6, 10 to 18, 21, 22, 25, and 27, as an illumination light source of a transparent original.

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